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REPORT ON ESTIMATES OF DAMAGE CAUSED BY THE EUROPEAN CORN BORER IN 1934.

Division of Cereal and Forage Insects
Bureau of Entomology and Plant Quarantine
U. S. Department of Agriculture

European Corn Borer Research

REPORT ON ESTIMATES OF DAMAGE CAUSED BY THE EUROPEAN CORN BORER IN 1934.

By A. M. Vance, Assistant Entomologist, and L. G. Jones, Junior Entomologist, Division of Cereal and Forage Insects, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

Introduction

Various surveys conducted during the season of 1934 contributed data which have been utilized in making estimates of damage caused by the European corn borer in that year. These investigations were directed from the laboratory for European corn borer research at Toledo, Ohio, W. A. Baker in charge.

The appreciation of the Bureau is expressed to the many farmers, market gardeners, canners, and seedsmen who cooperated with it in this work.

Damage to Market Sweet Corn

A limited survey of borer infestation and damage in early sweet corn was conducted, in 1934, in various parts of both the one- and two-generation areas. The fields included in this survey did not represent a random sampling but were selected to show the heaviest damage caused by the borer to this particular crop. The figures obtained, and presented in table 1, therefore, represent the highest infestation and crop loss found rather than an average applicable to any definite county or region.

In the course of this survey, a close estimate was made of the number of corn plants contained in each field, and the current price per dozen or per hundred ears of corn was obtained from each farmer. For the purpose of calculating the crop value and loss, the approximate number of ears per field was figured on the basis of one ear per plant. The percent of plant infestation was determined by a count of 100 random plants in each field and the average number of borers per infested plant found by a dissection of 10 infested plants in each field. When possible, 50 ears in a field were examined to learn the proportion of them that were unmarketable because of borer injury; where harvesting of the crop was near completion, an estimate of borer damage to the ears was procured from the farmer.

The estimates given in table 1 place the money loss caused by the borer to the sweet corn crop produced in the 260 surveyed fields in 1934, and valued at almost $100,000, at approximately $17,632. This sum was comprised of $8,485 in the 136 fields of the one-generation area and $9,147 in the 124 fields of the two-generation area. This loss represented 15.2 percent of the crop value in surveyed fields of the one-generation area, and 20.7 percent of the crop value in surveyed fields of the two-generation area.

Table 1. Summary of Data on Damage to Market Sweet Corn in 1934.

County	Period of survey	Number of fields surveyed	Number of acres surveyed	Average number of borers per 100 plants	Average percent of unmarketable ears	Estimated crop value in dollars	Estimated crop loss in		
							Dollars	Percent	Dollars per acre
One-generation area									
Lucas, Ohio	Jul. 30-Aug. 8	15	50.8	268	26.7	5,241	1,261	24.1	24.83
Monroe, N. Y.	Aug. 6-11	29	62.5	131	19.2	21,282	4,478	21.0	71.65
Orleans, N. Y.	Aug. 8-14	27	8.8	126	16.7	1,957	374	19.1	42.64
Chautauqua, N. Y.	Aug. 1- 7	25	25.2	79	15.4	4,642	850	18.3	33.81
Jefferson, N. Y.	Aug. 1- 4	25	28.5	70	14.6	7,315	1,455	19.9	51.06
Nassau, N. Y.	Jul. 30-Aug. 2	15	93.0	10	1.2	15,357	67	0.4	.72
Totals and averages	Jul. 30-Aug. 14	136	268.8	114	15.6	55,794	8,485	15.2	37.45
Two-generation area									
New Haven, Conn.	Jul. 19-Aug. 1	21	27.3	526	37.8	10,229	4,482	43.8	164.25
Hartford, Conn.	Jul. 20-30	25	32.5	446	35.5	10,699	2,936	27.4	90.35
Middlesex, Mass.	Jul. 23-Aug. 1	14	17.9	180	18.4	3,920	441	11.2	24.60
Bristol, Mass.	Jul. 31-Aug. 4	25	17.0	135	8.8	4,039	336	8.3	19.76
Newport-Bristol, R.I.	Jul. 23-30	28	35.1	175	8.6	8,068	621	7.7	17.70
Suffolk, N. Y.	Jul. 26-Aug. 3	11	26.3	29	7.8	7,228	331	4.6	12.59
Totals and averages	Jul. 19-Aug. 4	124	156.1	249	19.5	44,183	9,147	20.7	54.88
Grand totals and averages		260	424.9			99,977	17,632	17.6	46.16

Estimated borer loss per acre of sweet corn surveyed in 1934, varied from as low as $0.72 in Nassau county, New York, to as high as $164.25 in New Haven county, Connecticut. The per-acre loss in the one-generation area was calculated as $37.45 and in the two-generation area as $54.88, or an average of $46.16 for the combined counties of both areas.

In the one-generation area the highest percent of unmarketable ears of sweet corn was found in Lucas county, Ohio, but more extensive infestation and actually greater loss were experienced in western New York. In the two-generation area, the most serious damage to sweet corn in 1934, occurred in New Haven and Hartford counties of Connecticut.

Damage to Canning Sweet Corn in New York

During the first three weeks of September, 1934, a survey was conducted in the factories of various sweet-corn canning companies of western New York to ascertain the losses resulting from damage by the European corn borer. In each case the average percent of borer infestation was estimated by an examination of 100 ears of each of the several varieties of contract corn as delivered at the factory, and this figure was used to represent the loss of the delivered crop. Figures for the contracted acreages, the approximate tonnage of corn, the varieties grown, and the price per ton were furnished by officials of the various canning companies. The data obtained, together with estimates of the delivered crop value and loss from the borer, are presented in table 2.

The twenty-two canners interviewed, had contracted for a total of 14,690 acres of sweet corn in 1934, resulting in delivery at their factories of approximately 34,052 tons of corn. It was estimated from the survey, that about 711 tons of this corn were infested to some extent by the European corn borer. In addition to this injury in the factory-delivered crop, it was further estimated that twice that amount, or approximately 1422 tons, of borer-infested corn was culled in the field and not delivered to the factories.

Borer infestation in ears of corn at the various factories ran from 0 to 19 percent. Examinations of some of the fields from which borer-infested ears were harvested and delivered to the factory showed plant infestations ranging from only a trace to 65 percent.

The 1934 price of "average" corn, delivered at the factory, varied from $14.40 to $17.20 per ton, with an average of about $15.00.

Loss at the factory, as a result of borer damage to corn handled by the above canners in 1934, was estimated at $10,655, or 2.1 percent of the value of the delivered crop, divided between the farmer and the canner. The farmers producing this corn also incurred a very definite additional loss, as a result of culling borer-infested ears in the field at harvest. This has been estimated as twice that at the factory, less a certain sum received for some of the culled corn (sold for feed at $1.00 per ton), or approximately $20,519. On the basis of such estimates, the total money loss from direct borer damage to corn under contract to the 22 factories considered in this survey, amounted to approximately $31,174, and this estimate is considered

conservative. Most of the loss resulting from reduced productivity of borer-infested plants in the field is not included, nor does the estimate contain figures on the increased labor costs necessary to cull and trim borer-damaged corn during canning operations at the factory. This latter item is of considerable importance in some of the factories and has been estimated by various officials of the canning companies to vary from as low as 10 percent to as high as 75 percent of the normal costs of processing borer-free corn. Factory officials are also confronted with the danger of introducing borers into their canned corn.

Table 2. Estimates of Damage Caused by the European Corn Borer to Sweet Corn Delivered at Factories in Western New York. 1934.

Factory No.	Corn acreage under contract*	Estimated delivered corn in tons	Estimated value of delivered crop in dollars**	Estimated loss of delivered crop in	
				Percent	Dollars
1	750	1,125	16,875	6.0	1,012
2	600	900	13,500	5.0	675
3	300	450	6,750	3.0	203
4	400	600	9,000	4.0	360
5	175	263	3,945	19.0	750
6	150	150	2,250	13.0	292
7	347	694	10,410	8.0	833
8	400	800	12,000	2.0	240
9	400	800	12,000	5.0	600
10	30	60	900	2.0	18
11	1,000	2,000	30,000	4.0	1,200
12	450	900	13,500	2.0	270
13	474	948	14,220	3.0	427
14	450	900	13,500	3.0	405
15	230	460	6,900	7.0	483
16	1,400	4,200	63,000	0	0
17	500	750	11,250	3.0	337
18	700	1,050	15,750	4.0	630
19	1,800	5,400	81,000	0	0
20	1,000	3,000	45,000	1.0	450
21	2,734	8,202	123,030	1.0	1,230
22	400	400	6,000	4.0	240
Totals	14,690	34,052	510,780	2.1	10,655

* The chief varieties of sweet corn grown and their respective acreages were as follows: Top Cross Bantam-5792; Golden Cross Bantam-5600; Golden Bantam-934; Red Cob Evergreen, including Red Evergreen-555; Hickox's White-324; Whipple's Yellow-300; Bantam-300; Burbank-200; Golden Sunshine-165; Evergreen-165; Country Gentleman-100; Yellow Evergreen-100; Improved Bantam-75; Howling Mob-50; Golden Gentleman (?)-15; Early Evergreen-15.

** Figured at an average price of $15.00 per ton.

Damage to Seed Sweet Corn in Connecticut

For the third successive year, certain data were obtained in 1934 on damage of the European corn borer to sweet corn, grown for seed in southern and central Connecticut, by an examination of samples of the ears of such corn when racked and dried. Prior to the establishment of a damage index applicable to the seed corn crop, this method has been utilized satisfactorily to obtain estimates of borer injury and subsequent commercial loss.

Table 3 presents the data procured on borer damage to seed sweet corn in Connecticut during the period November 26 to December 5, 1934, and contains, at the bottom, a comparison of the total averages for 1932, 1933, and 1934. The following brief discussion explains further the current investigation and summarizes the results.

A total of approximately 146 acres of seed sweet corn, produced by 12 different growers in Connecticut, are represented by the 17 variety samples listed in the table. Each sample consisted of 300 ears taken at random from the various racks holding a particular lot of corn, and examined for damaged kernels.

The samples are representative of 10 varieties of sweet corn and were taken from the following localities in Connecticut: Nos. 1 and 2 from Orange; Nos. 3 to 8, inclusive, and No. 12 from Milford; Nos. 9 to 11, inclusive, from Woodmont; Nos. 13 and 14 from East Hartford; Nos. 15 and 16 from Windsor; and No. 17 from Wethersfield.

A total of 5100 ears were examined in 1934, and the total averages for this year are compared with those secured from data taken similarly on 5000 ears in 1933, and on 6900 ears in 1932.

The percent of clean ears (free from either borer or ear worm injury) in 1934, was 27.6 percent as compared with 29.7 percent in 1933, and 55.6 percent in 1932; 68.5 percent of the ears examined in 1934 showed borer damage as against 58.2 percent in 1933, and 13 percent in 1932; 61.4 percent of the ears in 1934 had borer damage to the middle or seed kernels as compared with 53.2 percent in 1933, and 3.8 percent in 1932; and 11.8 percent of the middle or seed kernels were destroyed by the borer in 1934 as against 3.2 percent in 1933, and 0.3 percent in 1932. The comparisons of the last item are of particular interest since the figures show a significant yearly increase in actual loss of corn seed as a result of borer infestation.

The average financial loss per acre caused by the borer to the ears, as determined by the checking of the injury apparent in racked and dried seed corn, has been estimated for each of the varieties sampled in 1934 and is shown in the table.

The financial loss per acre, among the 17 sampled varieties of corn, has been estimated to vary from $5.17 to a practically total loss of $90.00, with an average of $24.95. An estimate of borer loss to the total amount of seed corn produced on the entire 146 acres from which the samples were taken, has been placed at approximately $3650. Added labor costs have not been included. Further, it should be noted that these losses are largely the result of direct borer injury to the ears, and do not take into consideration the effects of infestation in reducing the productivity of the corn plants nor the loss, in the field, of ears which were too severely damaged to be worth harvesting.

Table 3. Summary of Data Taken on Racked and Dried Seed Sweet Corn in Connecticut to Show Damage by the European Corn Borer, 1934.

Sample No.	Variety of Corn	Percent of ears clean*	Percent of ears showing damage by European corn borer	Percent of ears showing borer damage to kernels			Percent of ears showing borer damage to cob	Estimated percent of total middle (seed) kernels destroyed by borer	Estimated financial loss by borer per acre
				Tip	Middle	Butt			
1	Long Island Beauty	13.3	79.0	60.0	76.3	41.7	23.0	7.3	$16.42
2	Purdue 39	22.0	75.3	51.7	73.3	60.3	9.3	5.4	12.15
3	Narrow Evergreen	26.0	69.3	53.0	63.7	24.7	8.0	3.8	8.55
4	Country Gentleman	31.3	67.3	56.0	62.3	37.0	5.3	4.0	9.00
5	Bantam Evergreen	14.3	83.7	72.3	81.3	59.0	22.7	24.0	54.00
6	Stowell's Evergreen	27.0	67.7	49.0	62.0	43.7	32.3	15.0	33.75
7	Bantam Evergreen	25.3	71.3	45.0	55.0	37.3	29.7	13.7	30.82
8	Stowell's Evergreen	40.7	51.7	33.7	32.3	16.7	7.3	4.5	10.13
9	Golden Bantam	9.7	81.7	66.3	76.7	58.0	8.7	18.3	41.18
10	Long Island Beauty	50.0	44.7	32.7	35.3	15.7	2.0	2.3	5.17
11	Whipple's Yellow	34.0	60.3	41.7	50.7	32.3	7.0	9.2	20.70
12	Golden Bantam	17.7	73.7	50.7	64.7	45.0	22.7	12.1	27.22
13	Early Yellow Sensation	0	100.0	94.3	99.7	85.3	66.3	51.3	90.00
14	Stowell's Evergreen	8.7	91.0	82.3	84.3	60.7	15.7	13.5	30.38
15	Golden Bantam	58.0	41.7	30.7	32.7	25.3	1.7	6.3	14.17
16	Country Gentleman	50.1	48.3	35.7	43.3	32.7	3.7	4.0	9.00
17	Golden Cross Bantam	41.0	57.7	40.3	50.0	20.0	4.7	5.1	11.47
Yearly Averages									
	1934	27.6	68.5	52.7	61.4	40.9	15.9	11.8	$24.95
	1933	29.7	58.2	27.7	53.2	14.1	9.1	3.2	- -
	1932	55.6	13.0	4.2	3.8	4.5	9.9	0.3	- -

* Free from either borer or ear worm injury.

Briefly, from a review of the data obtained in the past three years it is concluded that damage of the European corn borer to seed sweet corn in Connecticut, showed a significant increase in 1933 over 1932, and in 1934 over either of the other two years, and that the infestation has reached a point where important commercial losses are being experienced both by the contract grower and the seed house.

Area-Wide Estimates of Damage

Estimates of damage caused by the borer in 1934 to field, fodder, and sweet corn over a large portion of the older infested territory, have been prepared according to the method used for this purpose during the past two years. These are summarized in table 4 for all counties or county groups surveyed for infestation in 1934. In table 5 are presented general comparisons of the assembled data for 1932, 1933, and 1934, based on only those counties which were surveyed during each of these three years. All estimates of this character must necessarily be approximate and, in general, more indicative than factual. It is considered, however, that the figures are conservative and represent, for the most part, only the more apparent and direct damage caused by the borer.

In the calculations, damage indices of 3 percent loss per borer per plant in the case of field and fodder corn, and of 8 percent for sweet corn were applied to the average borer populations per county or county group, as determined from the fall infestation survey, to give percentages of loss for infestations of varying intensity. The same average borer population figures were utilized for all three types of corn.

Figures on corn production were taken from the Fifteenth Agricultural Census. For the purpose of this study, the production of fodder corn was calculated in bushels by applying to acreage figures the average per-acre yield of field corn. The two crops were then considered as one and given the same money value. Estimates of sweet corn production were obtained by multiplying the county acreages of this crop given in the 1930 Census by an average yield of 800 dozen ears per acre. Silage corn has not been considered.

The average prices per bushel received by producers on December 1, as furnished by the Bureau of Agricultural Economics, were applied to field and fodder corn. These prices were: 31.8 cents in 1932, 40.6 cents in 1933, and 78.6 cents in 1934. In the case of sweet corn, the following prices per dozen ears were used: For Michigan, Ohio, and Indiana, 7 cents in 1932, 8.5 cents in 1933, and 11 cents in 1934 (Based on daily prices supplied by the Toledo Gardeners' Co-operative Association); for western New York and Pennsylvania, 17.5 cents in 1932, 20 cents in 1933, and 14 cents in 1934 (Based on estimates furnished by the State Department of Agriculture and Markets, Buffalo, New York); and for New England, New Jersey, and Suffolk county, New York, 13.6 cents in 1932, 16 cents in 1933, and 17 cents in 1934 (Based on daily quotations from the Boston Produce Exchange).

Briefly, the total loss from the borer to corn in all of the infested territory surveyed in 1934, involving a crop valued at approximately $97,344,335, is estimated at $602,384. This loss was divided as follows: Field and fodder corn, $273,802 (45.4 percent) and sweet corn, $328.582 (54.6 percent).

In the one-generation area the loss to field and fodder corn in 1934, was estimated at $223,332 (83.1 percent of entire loss in this area) and to sweet corn at $45,426 (16.9 percent), or a total of $268,758.

In the two-generation area, the loss to field and fodder corn in 1934, was estimated at $50,470 (15.1 percent of entire loss in this area) and to sweet corn at $283,156 (84.9 percent), or a total of $333,626.

The calculated percent loss in the crop was considered to vary directly with the intensity of infestation (average number of borers per 100 plants) and in 1934, this reached a maximum for each type of corn in New Haven and Middlesex counties, Connecticut.

The greatest total loss from the borer in any single county surveyed in 1934, was found in Suffolk, New York, and was estimated at $77,366. The surveyed portion of Ohio showed a greater total loss ($168,474) in 1934, than did any other State region.

In the one-generation area, borer damage in 1934, on the basis of data from comparable counties as shown in table 5, was less than in either of the previous two years. In the two-generation area, and in both areas combined, the 1934 crop loss from the borer showed a decrease from that of 1933, although it remained greater than in 1932. Much higher prices for corn in 1934 than in 1932 and 1933, did not offset the effect of the generally reduced borer infestation of 1934.

The estimated per-acre loss from the borer continued to be higher in sweet than in field and fodder corn in both areas, and greater for all types of corn in the two- than in the one-generation area.

Table 4. - Estimates of Damage Caused by the European Corn Borer to Field, Fodder, and Sweet Corn in Counties, and for State Regions, Surveyed in 1934.

State and county or county group	Bushels of field and fodder corn	Dozen ears of sweet corn	Estimated value of crop in dollars			Average number of borers per 100 plants	Calculated percent loss in		Estimated loss of crop in dollars		
			Field and fodder corn	Sweet corn	Total		Field and fodder corn	Sweet corn	Field and fodder corn	Sweet corn	Total
					One-generation area						
Michigan											
Lenawee	2,185,623	218,400	1,717,900	24,024	1,741,924	13.3	.40	1.06	6,872	255	7,127
Macomb	349,325	304,800	274,569	33,528	308,097	20.9	.63	1.67	1,750	560	2,290
Monroe	1,771,569	1,130,400	1,392,453	124,344	1,516,797	27.6	.83	2.21	11,557	2,748	14,305
St. Clair	315,492	155,200	247,977	17,072	265,049	11.8	.35	.94	868	160	1,028
Washtenaw	1,047,790	551,200	823,563	60,632	884,195	2.7	.08	.22	659	133	792
Wayne	317,039	2,023,200	249,193	222,552	471,745	7.7	.23	.62	573	1,380	1,953
Hillsdale-Ingham-Jackson	2,192,619	540,000	1,723,399	59,400	1,782,799	1.2	.04	.10	689	59	748
Huron-Sanilac-Tuscola-Genesee	1,773,560	578,400	1,394,018	63,624	1,457,642	15.6	.47	1.25	6,552	795	7,347
Lapeer-Livingston-Oakland	1,009,749	481,600	793,663	52,976	846,639	3.7	.11	.30	873	159	1,032
Totals	10,962,766	5,983,200	8,616,735	658,152	9,274,887				30,373	6,249	36,622
Indiana											
Adams-Jay-Blackford-Wells	4,141,168	115,200	3,254,958	12,672	3,267,630	.3	.01	.02	325	3	328
Allen-DeKalb-Steuben	4,126,771	274,400	3,243,642	30,184	3,273,826	7.7	.23	.62	7,460	187	7,647
Delaware-Randolph-Henry-Wayne	8,175,115	388,000	6,425,640	42,680	6,468,320	0	0	0	0	0	0
Huntington-Noble-Whitley	4,212,810	70,400	3,311,269	7,744	3,319,013	2.6	.08	.21	2,649	16	2,665
Totals	20,655,864	848,000	16,235,509	93,280	16,328,789				10,434	206	10,640

Table 4. - Continued

State and county or county group	Bushels of field and fodder corn	Dozen ears of sweet corn	Estimated value of crop in dollars			Average number of borers per 100 plants	Calculated percent loss in		Estimated loss of crop in dollars		
			Field and fodder corn	Sweet corn	Total		Field and fodder corn	Sweet corn	Field and fodder corn	Sweet corn	Total
Ohio											
Defiance	1,426,148	60,800	1,120,952	6,688	1,127,640	8.1	.24	.65	2,690	43	2,733
Fulton	1,850,039	198,400	1,454,131	21,824	1,475,955	30.1	.90	2.41	13,087	526	13,613
Hancock	2,481,693	28,000	1,950,611	3,080	1,953,691	25.9	.78	2.07	15,215	64	15,279
Henry	2,494,776	124,000	1,960,894	13,640	1,974,534	10.4	.31	.83	6,079	113	6,192
Lucas	911,224	1,735,200	716,222	190,872	907,094	22.7	.68	1.82	4,870	3,474	8,344
Ottawa	778,116	69,600	611,599	7,656	619,255	22.5	.68	1.80	4,159	138	4,297
Paulding	1,837,375	102,400	1,444,177	11,264	1,455,441	3.0	.09	.24	1,300	27	1,327
Putnam	2,437,268	31,200	1,915,693	3,432	1,919,125	3.1	.09	.25	1,724	9	1,733
Sandusky	1,875,413	823,200	1,474,075	90,552	1,564,627	3.8	.11	.30	1,621	272	1,893
Seneca	2,361,516	108,000	1,856,152	11,880	1,868,032	16.7	.50	1.34	9,281	159	9,440
Williams	1,269,920	23,200	998,157	2,552	1,000,709	2.5	.08	.20	799	5	804
Wood	3,597,575	98,400	2,827,692	10,824	2,838,516	47.6	1.43	3.81	40,436	412	40,848
Ashland-Richland-Knox-Morrow	4,091,986	196,800	3,216,301	21,648	3,237,949	2.7	.08	.22	2,573	48	2,621
Auglaize-Allen-Van Wert-Mercer	7,641,186	282,400	6,005,972	31,064	6,037,036	8.4	.28	.67	16,817	208	17,025
Erie-Huron-Lorain	2,163,499	4,261,600	1,700,510	468,776	2,169,286	10.2	.31	.82	5,272	3,844	9,116
Fayette-Madison-Clark-Greene-Montgomery	12,285,305	4,494,400	9,656,250	494,384	10,150,634	.3	.01	.02	966	99	1,065
Miami-Darke-Shelby-Logan-Champaign	10,866,242	648,000	8,540,866	71,280	8,612,146	5.0	.15	.40	12,811	285	13,096
Summit-Portage-Stark-Wayne-Medina	3,752,333	1,317,600	2,949,334	144,936	3,094,270	5.7	.17	.46	5,014	667	5,681
Union-Delaware-Marion-Hardin	7,143,465	570,400	5,614,763	62,744	5,677,507	7.1	.21	.57	11,791	358	12,149
Wyandot-Crawford	3,082,772	44,800	2,423,059	4,928	2,427,987	1.5	.05	.12	1,212	6	1,218
Totals	74,347,849	15,218,400	58,437,410	1,674,024	60,111,434				157,717	10,757	168,474

Table 4. - Continued

State and county or county group	Bushels of field and fodder corn	Dozen ears of sweet corn	Estimated value of crop in dollars			Average number of borers per 100 plants	Calculated percent loss in		Estimated loss of crop in dollars		
			Field and fodder corn	Sweet corn	Total		Field and fodder corn	Sweet corn	Field and fodder corn	Sweet corn	Total
New York											
Cattaraugus	102,946	100,800	80,916	14,112	95,028	.8	.02	.06	16	8	24
Chautauqua	144,795	300,000	113,809	42,000	155,809	8.6	.26	.69	296	290	586
Erie	215,061	1,704,800	169,038	238,672	407,710	7.7	.23	.62	389	1,480	1,869
Genesee	151,315	545,600	118,934	76,384	195,318	14.3	.43	1.14	511	871	1,382
Jefferson	148,399	240,000	116,642	33,600	150,242	50.8	1.52	4.06	1,773	1,364	3,137
Monroe	356,524	1,795,200	280,228	251,328	531,556	60.1	1.80	4.81	5,044	12,089	17,133
Niagara	326,802	416,800	256,866	58,352	315,218	25.3	.76	2.02	1,952	1,179	3,131
Orleans	180,610	143,200	141,959	20,048	162,007	90.5	2.72	7.24	3,861	1,451	5,312
Oswego	216,918	463,200	170,498	64,848	235,346	32.0	.96	2.56	1,637	1,660	3,297
Wayne	481,964	562,400	378,824	78,736	457,560	44.9	1.35	3.59	5,114	2,827	7,941
Albany-Schoharie-Schenectady-Montgomery-Fulton	578,587	1,121,600	454,769	157,024	611,793	25.4	.76	2.03	3,456	3,188	6,644
Livingston-Ontario-Wyoming	611,181	5,311,200	480,388	743,568	1,223,956	2.7	.08	.22	384	1,636	2,020
Totals	3,515,102	12,704,800	2,762,871	1,778,672	4,541,543				24,433	28,043	52,476
Pennsylvania											
Crawford-Erie-Warren	680,901	676,800	535,188	94,752	629,940	2.2	.07	.18	375	171	546
Totals for one-generation area	110,162,482	35,431,200	86,587,713	4,298,880	90,886,593				223,332	45,426	268,758

Table 4. - Continued

State and county or county group	Bushels of field and fodder corn	Dozen ears of sweet corn	Estimated value of crop in dollars			Average number of borers per 100 plants	Calculated percent loss in		Estimated loss of crop in dollars		
			Field and fodder corn	Sweet corn	Total		Field and fodder corn	Sweet corn	Field and fodder corn	Sweet corn	Total
Two-generation area											
Massachusetts											
Bristol	48,882	1,191,200	38,421	202,504	240,925	107.2	3.22	8.58	1,237	17,375	18,612
Essex	36,783	892,000	28,911	151,640	180,551	105.8	3.17	8.46	916	12,829	13,745
Middlesex	65,477	2,095,200	51,465	356,184	407,649	185.9	5.58	14.87	2,872	52,965	55,837
Franklin-Hampshire-Hampden-Worcester	399,701	1,792,800	314,165	304,776	618,941	40.1	1.20	3.21	3,770	9,783	13,553
Norfolk-Plymouth-Barnstable	45,426	680,800	35,705	115,736	151,441	153.5	4.61	12.28	1,646	14,212	15,858
Totals	646,269	6,652,000	468,667	1,130,840	1,599,507				10,441	107,164	117,605
Connecticut											
Hartford	266,700	796,800	209,626	135,456	345,082	61.3	1.84	4.90	3,857	6,637	10,494
Middlesex	46,693	150,400	36,701	25,568	62,269	318.2	9.55	25.46	3,505	6,510	10,015
New Haven	95,375	1,550,400	74,965	263,568	338,535	325.0	9.75	26.00	7,309	68,528	75,837
New London	94,859	247,200	74,559	42,024	116,583	135.8	4.07	10.86	3,035	4,564	7,599
Totals	503,627	2,744,800	395,851	466,616	862,467				17,706	86,239	103,945
Rhode Island											
Newport-Bristol	64,466	394,400	50,670	67,048	117,718	172.3	5.17	13.78	2,620	9,239	11,859
Washington-Kent-Providence	86,701	564,000	68,147	95,880	164,027	61.7	1.85	4.94	1,261	4,736	5,997
Totals	151,167	958,400	118,817	162,928	281,745				3,881	13,975	17,856
New Hampshire											
Hillsborough-Rockingham-Strafford	82,652	924,000	64,964	157,080	222,044	7.6	.23	.61	149	958	1,107

Table 4. - Continued

State and county or county group	Bushels of field and fodder corn	Dozen ears of sweet corn	Estimated value of crop in dollars			Average number of borers per 100 plants	Calculated percent loss in		Estimated loss of crop in dollars		
			Field and fodder corn	Sweet corn	Total		Field and fodder corn	Sweet corn	Field and fodder corn	Sweet corn	Total
Vermont											
Bennington-Rutland-Windsor-Windham	237,485	501,600	186,663	85,272	271,935	23.2	.70	1.86	1,307	1,586	2,893
New Jersey											
Atlantic-Burlington-Ocean-Monmouth	1,402,274	9,790,400	1,102,187	1,664,368	2,766,555	7.7	.23	.62	2,535	10,319	12,854
New York											
Suffolk	219,136	1,654,400	172,241	281,248	453,489	279.6	8.39	22.37	14,451	62,915	77,366
Totals for two-generation area	3,242,610	23,225,600	2,509,390	3,948,352	6,457,742				50,470	283,156	333,626
Grand totals	113,405,092	58,656,800	89,097,103	8,247,232	97,344,335				273,802	328,582	602,384

Table 5. - Estimates of Damage Caused by the European Corn Borer to Field, Fodder, and Sweet Corn in 1932, 1933, and 1934.

	Acreage	Estimated value of crop in dollars			Estimated loss of crop in dollars			Estimated average loss of crop per acre in dollars		
		1932	1933	1934	1932	1933	1934	1932	1933	1934
One-generation area*										
Field and fodder corn	1,428,780	15,758,257	20,118,506	38,948,633	183,700	206,181	175,941	.13	.14	.12
Sweet corn	24,127	1,999,088	2,350,324	2,308,312	85,789	69,198	38,094	3.56	2.87	1.58
Totals	1,452,907	17,757,345	22,468,830	41,256,945	269,489	275,379	214,035	.19	.19	.15
Two-generation area**										
Field and fodder corn	20,001	298,401	380,981	737,560	14,627	32,340	39,804	.73	1.62	1.99
Sweet corn	11,215	1,220,190	1,435,520	1,525,240	168,743	298,340	241,562	15.05	26.60	21.54
Totals	31,216	1,518,591	1,816,501	2,262,800	183,370	330,680	281,366	5.87	10.59	9.01
Both areas										
Field and fodder corn	1,448,781	16,056,658	20,499,487	39,686,193	198,327	238,521	215,745	.14	.16	.15
Sweet corn	35,342	3,219,278	3,785,844	3,833,552	254,532	367,538	279,656	7.20	10.40	7.91
Grand totals	1,484,123	19,275,936	24,285,331	43,519,745	452,859	606,059	495,401	3.05	4.08	3.34

*Comprises the following comparable counties and county groups: Lenawee, Macomb, Monroe, St. Clair, Washtenaw, Wayne, and Lapeer-Livingston-Oakland in Michigan; Allen-DeKalb-Steuben in Indiana; Defiance, Fulton, Hancock, Henry, Lucas, Ottawa, Paulding, Putnam, Sandusky, Seneca, Williams, Wood, Allen-Auglaize-Van Wert-Mercer, Crawford-Wyandot, and Erie-Huron-Lorain in Ohio; and Chautauqua, Erie, Genesee, Jefferson, Monroe, Niagara, Orleans, Oswego, and Wayne in New York.

**Comprises the following comparable counties and county groups: Bristol, Essex, and Middlesex in Massachusetts; Newport-Bristol in Rhode Island; Hartford, Middlesex, New Haven, and New London in Connecticut; and Suffolk in New York.